

What Is Claimed Is:

1 1. A method for implementing a sleep proxy, comprising:
2 receiving a request at the sleep proxy for information pertaining to a
3 service provided by a device;
4 determining if the device is a member of a list of devices for which the
5 sleep proxy answers;
6 if so, determining if the request is a request for which the sleep proxy can
7 answer; and
8 if so, sending a response to the request on behalf of the device.

1 2. The method of claim 1, wherein if the request is not a request for
2 which the sleep proxy can answer, the method further comprises sending a
3 wakeup packet to the device, wherein the wakeup packet is a packet that causes
4 the device to exit a power-saving mode.

1 3. The method of claim 1, wherein prior to receiving the request, the
2 method further comprises:
3 receiving a registration request from the device, wherein the registration
4 request contains:
5 sufficient information to allow the sleep proxy to generate a
6 wakeup packet that can wake up the device, and
7 a list of requests for which the sleep proxy can answer; and
8 adding the device to the list of devices for which the sleep proxy answers.

1 4. The method of claim 3, wherein the registration additionally
2 contains a lease expiration time, wherein upon reaching the lease expiration time,
3 the sleep proxy cancels the device registration.

1 5. The method of claim 4, wherein an internal timer in the device
2 wakes up the device so that the device can renew its registration with the sleep
3 proxy before the registration expires.

1 6. The method of claim 1, further comprising:
2 receiving a notification from the device that the device is entering a
3 power-saving state; and
4 in response to the notification, configuring the sleep proxy to answer for
5 the device.

1 7. The method of claim 1, further comprising:
2 receiving a notification from the device that the device has exited a power-
3 saving state; and
4 in response to the notification, configuring the sleep proxy not to answer
5 for the device.

1 8. The method of claim 1, further comprising implementing a second
2 sleep proxy that duplicates the functionality of the sleep proxy for fault-tolerance
3 purposes.

1 9. The method of claim 1, wherein sending a response to the request
2 further comprises waiting a random period of time prior to sending the response,

3 wherein waiting the random period of time facilitates duplicate answer
4 suppression between sleep proxies.

1 10. A computer-readable storage medium storing instructions that
2 .when executed by a computer cause the computer to perform a method for
3 implementing a sleep proxy, the method comprising:
4 receiving a request at the sleep proxy for information pertaining to a
5 service provided by a device;
6 determining if the device is a member of a list of devices for which the
7 sleep proxy answers;
8 if so, determining if the request is a request for which the sleep proxy can
9 answer; and
10 if so, sending a response to the request on behalf of the device.

1 11. The computer-readable storage medium of claim 10, wherein if the
2 request is not a request for which the sleep proxy can answer, the method further
3 comprises sending a wakeup packet to the device, wherein the wakeup packet is a
4 packet that causes the device to exit a power-saving mode.

1 12. The computer-readable storage medium of claim 10, wherein prior
2 to receiving the request, the method further comprises:
3 receiving a registration request from the device, wherein the registration
4 request contains:
5 sufficient information to allow the sleep proxy to generate a
6 wakeup packet that can wake up the device, and
7 a list of requests for which the sleep proxy can answer; and
8 adding the device to the list of devices for which the sleep proxy answers.

1 13. The computer-readable storage medium of claim 12, wherein the
2 registration additionally contains a lease expiration time, wherein upon reaching
3 the lease expiration time, the sleep proxy cancels the device registration.

1 14. The computer-readable storage medium of claim 13, wherein an
2 internal timer in the device wakes up the device so that the device can renew its
3 registration with the sleep proxy before the registration expires.

1 15. The computer-readable storage medium of claim 10, wherein the
2 method further comprises:
3 receiving a notification from the device that the device is entering a
4 power-saving state; and
5 in response to the notification, configuring the sleep proxy to answer for
6 the device.

1 16. The computer-readable storage medium of claim 10, wherein the
2 method further comprises:
3 receiving a notification from the device that the device has exited a power-
4 saving state; and
5 in response to the notification, configuring the sleep proxy not to answer
6 for the device.

1 17. The computer-readable storage medium of claim 10, wherein the
2 method further comprises implementing a second sleep proxy that duplicates the
3 functionality of the sleep proxy for fault-tolerance purposes.

1 18. The computer-readable storage medium of claim 10, wherein
2 sending a response to the request further comprises waiting a random period of
3 time prior to sending the response, wherein waiting the random period of time
4 facilitates duplicate answer suppression between sleep proxies.

1 19. An apparatus that implements a sleep proxy, comprising:
2 a receiving mechanism configured to receive a request at the sleep proxy
3 for information pertaining to a service provided by a device;
4 a determination mechanism configured to determine if the device is a
5 member of a list of devices for which the sleep proxy answers;
6 a second determination mechanism configured to determine if the request
7 is a request for which the sleep proxy can answer if the device is a member of the
8 list of devices for which the sleep proxy answers; and
9 a response mechanism configured to send a response to the request on
10 behalf of the device if the request is a request for which the sleep proxy can
11 answer.

1 20. The apparatus of claim 19, wherein if the request is not a request
2 for which the sleep proxy can answer, the apparatus further comprises a wakeup
3 mechanism configured to send a wakeup packet to the device that causes the
4 device to exit a power-saving mode.

1 21. The apparatus of claim 19, further comprising:
2 a registration mechanism configured to receive a registration request from
3 the device, wherein the registration request contains:
4 sufficient information to allow the sleep proxy to generate a
5 wakeup packet that can wake up the device, and

6 a list of requests for which the sleep proxy can answer; and
7 a list addition mechanism configured to add the device to the list of
8 devices for which the sleep proxy answers.

1 22. The apparatus of claim 21, wherein the registration additionally
2 contains a lease expiration time, and wherein the apparatus further comprises a
3 cancellation mechanism that is configured to cancel the device registration upon
4 reaching the lease expiration time.

1 23. The apparatus of claim 22, wherein an internal timer in the device
2 wakes up the device so that the device can renew its registration with the sleep
3 proxy before the registration expires.

1 24. The apparatus of claim 19, further comprising:
2 a notification mechanism configured to receive a notification from the
3 device that the device is entering a power-saving state; and
4 a configuration mechanism configured to configure the sleep proxy to
5 answer for the device in response to the notification.

1 25. The apparatus of claim 19, further comprising:
2 a notification mechanism configured to receive a notification from the
3 device that the device has exited a power-saving state; and
4 a configuration mechanism configured to configure the sleep proxy not to
5 answer for the device in response to the notification.

1 26. The apparatus of claim 19, further comprising a second sleep proxy
2 that duplicates the functionality of the sleep proxy for fault-tolerance purposes.

1 27. The apparatus of claim 19, wherein the response mechanism is
2 further configured to wait a random period of time prior to sending the response,
3 wherein waiting the random period of time facilitates duplicate answer
4 suppression between sleep proxies.